

**STUDY ON IDENTIFYING HOSPITAL ACQUIRED
INFECTION WITH A FOCUS ON ASEPTIC PRECAUTIONS
FOLLOWED BY STAFF TO PREVENT THEM**

**Dissertation
At
Apollo BSR Hospitals, Bhilai**

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**MBA Hospital & Health Management
2013–15**


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Jaipur
2015**

TO WHOMSOEVER MAY CONCERN

This is to certify that Dr Mohammad Farhan student of MBA Hospital and Health Management from IIHMR University, Jaipur has undergone internship training at Apollo BSR Hospitals, Bhilai from 1st March to 9th May 2015.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



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The certificate is awarded to

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In recognition of having successfully completed his
Internship in the department of Quality

And has successfully completed his Project on

A study on identifying hospital acquired infections with a focus on aseptic precautions
followed by staff to prevent them

1st March to 9th May, 2015

In
Apollo BSR hospitals, Bhilai

He comes across as a committed, sincere & diligent person who has a
strong drive & zeal for learning

We wish him all the best for future endeavors


CAO

Sanjay Srivastava

Apollo BSR hospitals, Bhilai



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This is to certify that the dissertation titled "**A study on identifying hospital acquired infections with a focus on aseptic precautions followed by staff to prevent them**" and submitted by **Dr Mohammad Farhan**, Enrollment No. **1465** under the supervision of **Dr S.D. Gupta** for award of MBA Hospital and Health Management of the university carried out during the period from 1st March to 9th May 2015 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.



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ABSTRACT

In the study it was found that staff had adequate knowledge regarding aseptic precautions such as hand hygiene but in practice they don't follow. This might be because of lack of practical training and inability to perform the work. Nursing staff are in close contact with the patient and they perform various duties like giving medicine, food, bedside procedure, etc. to patients. The knowledge has to be transformed into practice so that it gives effective result in health of the patient. There must be regular bedside training of nurses either by doctors, consultants, quality persons so that hospital achieves safe practice and proper patient care.

In relation with doctors it has been seen that doctors are doing their work effectively but there must be a proper mechanism so that suspected case of HAI is ruled out. HAI's have not been documented. All the suspected cases of HAI should be classified as catheter induced or caused by disease.

It has been seen that many times patients have plenty of pus cells in urinalysis and it has been not figured out whether its is due to catheter or due to the existing disease condition. Same is seen with CLABSI and VAP. Doctors should have a note of it in order to reduce the infection rate in hospital.

Success of a hospital depends upon the way they are able to reduce the infections which is usually under the control of the working staff. It will not only reduce the length of stay of patients but will also not put extra burden of cost on the patients.

ACKNOWLEDGEMENT

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However, I accept the sole responsibility for any possible error of omission and would be extremely grateful to the readers of this project report if they bring such mistakes to my notice.

Dr. Mohammad Farhan

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LIST OF ABBREVIATIONS

OT	Operation Theatre
ICU	Intensive Care unit(Medical, Surgical, Cardiac)
BMW	Biomedical waste
AC	Air conditioner
AHU	Air handling unit
PPE	Personal Protective Equipments
Pas	Pascal
NABH	National Accreditation Board for Hospitals and Healthcare
ETO	Ethylene Oxide
CSSD	Central Sterile Stores Department
CAUTI	Catheter-Associated Urinary Tract Infections
IV	Intravenous
Secs	Seconds
Rh	Relative Humidity
CDC	Centre for disease control

DISSERTATION

A study on identifying hospital acquired infections with a focus on aseptic precautions followed by staff to prevent them

PROBLEM STATEMENT

Cases of hospitals acquired infections are not reported by hospitals. It creates bad image of hospitals at the time of audits. As a result of no reporting of cases, there are no interventions designed to stop the spread. This leads to increase resistance of micro-organisms to antibiotics. Due to bad recovery or non- recovery of patients, hospital stay of patients gets prolonged which causes huge financial loss to patients. In worse situations, mortality in a hospital increases. Hence controlling such infections is a necessity in order to reduce infection rates in a hospital.

RESEARCH QUESTION

- 1) What is the level of knowledge and practice among health staff regarding aseptic precautions in order to prevent hospital acquired infections?
- 2) Which are the suspected cases of hospital acquired infections that were not managed as HAI and were unreported?

OBJECTIVES

- To improve the reporting of HAI
- To analyze the reasons at different levels responsible for causing infections
- To assess the infection control measures used by hospital
- To reduce the incidence of HAI
- To suggest new intervention to counter non-reporting of HAI cases

LITERATURE REVIEW

Health care-associated infection (HCAI), also referred to as “nosocomial” or “hospital” infection, is defined as: “An infection occurring in a patient during the process of care in a health-care facility which was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff.”

HCAI is acknowledged as the most frequent adverse event in health care, but the global burden remains unknown because of the difficulty of gathering reliable data.

According to a literature review of national or multicentre studies published from 1995 to 2008, the overall prevalence of HCAI in developed countries varies between 5.1% and 11.6%

While HCAI surveillance systems are in place at national/sub-national level in many developed countries, only 23 developing countries reported a functioning national surveillance system in a survey conducted by the WHO First Global Patient Safety Challenge. Therefore, very scanty data is available from the vast majority of low and middle-income countries. Only nine published studies reported HCAI data at national level. Studies conducted in health-care settings in developing countries report hospital-wide HCAI rates markedly higher than those in developed countries.

The burden of HCAI is also much more severe in high-risk populations, such as adults housed in critical care and neonates, with overall infection rates and device-associated infection rates several fold higher than in developed countries. The incidence of infection acquired in critical care in developing countries is at least twice that of the United States. In particular for some device associated infections (e.g. bloodstream infection and ventilator associated pneumonia), incidence densities can be up to 19 times higher than in developed countries.

METHODOLOGY

Source of data

a) Primary source

Observation of hygienic practices being followed by the staff and hospital as a whole, staff was observed

b) Secondary source

Active files from ICU and wards, passive files from medical records departments were audited for cases of HAI

Study Type

Analytical

Type of data

Quantitative

Location of study- Apollo BSR Hospital, Bhilai

Study Area –ICUs (Medical, Surgical, and Cardiac), Wards (General, General 1, General 2, Private, Semi-private, Executive, Deluxe, Super Deluxe) and MRD for auditing files.

Sampling method– Purposive. Passive files were taken from MRD for last two months that is January and February, 2015. From these files only those files were selected for study in which patients were admitted for at least 5 days and were put on urinary catheter, central line, and ventilator and were operated. Auditing was done based on the checklist. Hospital staff was observed with prepared checklist.

Sample size – 250 Passive files 150 and active files were audited and observed for the Hospital acquired infections, 54 hospital staff was observed.

Study Technique – Observation were done with the help of prepared checklist. The observation has to be noted and graph has to be prepared and analysis done.

Data collection Tool – Structured checklist was prepared by referring to the NABH guidelines and CDC for the common HAI and observations were made while taking rounds of ICU and wards to see the work performed by staff of all departments. Files were audited with the help of prepared checklist.

Data analysis – Done with the help of MS-Excel sheets. The data of suspected HAI case was analyzed and graphs of practices among staff was prepared to check the awareness.

Ethical Considerations- Purpose of the study was clearly explained. The respondents were assured of the data confidentiality

IMPACT OF HCAI

The impact of HCAI implies prolonged hospital stay, long-term disability, increased resistance of microorganisms to antimicrobials, massive additional financial burden for health systems, high costs for patients and their family, and unnecessary deaths.

Some infections, such as bloodstream infection and ventilator associated pneumonia, have a more severe impact than others in terms of mortality and extra costs.

The Hospital acquired infections which are common are as follows:

- 1) Catheter associated Urinary tract infections (CAUTI)
- 2) Surgical site infections (SSI)
- 3) Central line associated Bloodstream infections (CLABSI)
- 4) Ventilator associated Pneumonia (VAP)
- 5) Methicillin resistant *Staphylococcus aureus* (MRSA)
- 6) *Clostridium difficile* Infections (CDI)

Catheter associated Urinary tract infection: Urinary tract infection attributed to the use of an indwelling urinary catheter is one of the most common infection acquired by patient in health care facilities. As biofilm ultimately develops on all of these devices, the major determinant for development of bacteriuria is duration of catheterization. Catheter acquired infection is the source for about 20% of episode of health care acquired bacteremia in acute care facilities, and over 50% in long term care facilities. The most important interventions to prevent bacteriuria and infection are to limit indwelling catheter use and when catheter use is necessary, to discontinue the catheter as soon as clinically feasible. Infection control program in health care facilities must implement and monitor strategies to limit catheter acquired urinary infection, including surveillance of catheter use, appropriateness of catheter indication, and complications. Ultimately, prevention of these infections will require technical advances in catheter materials which prevent bio-film formation.

Catheter acquired urinary tract infection is one of the most common health care acquired infections 70-80% of these infections are attributable to use of indwelling urethral catheter.

Indwelling urethral catheter use is exceedingly common in health care facilities. Prevention of infections attributable to these devices is an important goal of health-care infection prevention programs. Indwelling urinary catheters are generally considered to be short term if they are in situ for less than 30 days and chronic or long term when in situ for 30 days or more. Indwelling catheter use in acute care facilities is usually short term, while chronic catheters are most common for residents of long term care facilities. Clinical and microbiologic considerations may vary for short and long term catheters. Urinary catheter acquired infection is usually manifested as asymptomatic bacteriuria (CA-ASB). The term catheter associated urinary tract infection (CA-UTI) is used to refer to individuals with symptomatic infection.

Asymptomatic bacteriuria

Duration of catheterization is the most important determinant of bacteriuria. The daily risk of acquisition of bacteriuria when an indwelling catheter in situ is 3–7%. The rate of acquisition is higher for women and older persons. Bacteriuria is universal once a catheter remains in place for several weeks. Patients with chronic indwelling catheters are assumed to be continuously bacteriuric. From 60–80% of hospitalized patients with an indwelling catheter receive antimicrobials, usually for indications other than urinary tract infection. Bacteria colonizing the drainage bags of catheterized patients have been reported to be a source for outbreak of resistant organisms in acute care facilities. In the nursing home setting, the urine of residents with chronic indwelling catheters is the most common site of isolation of resistant gram negative organisms.

Symptomatic urinary tract infection

CA-UTI is the most common adverse event associated with indwelling urinary catheter use, although only a small proportion of acute care facility residents with CA-ASB develop symptomatic infection.

Bacteremia

Less than 3% of subjects with CA-ASB develop bacteremia with the urinary isolate but, given the high frequency of indwelling urinary catheter use, CA-UTI is one of the most common causes of secondary bloodstream infection in acute care facilities.

Other morbidity

Additional infectious complications, usually identified in patients with a chronic indwelling catheter, include urinary catheter obstruction, bladder urolithiasis, purulent urethritis, gland abscesses and, for males, prostatitis. Non-infectious complications attributed to an indwelling urinary catheter include nonbacterial urethral inflammation, urethral strictures, mechanical trauma, and mobility impairment.

Surgical site infections: Surgical site infection is a type of healthcare-associated infection in which a wound infection occurs after an invasive Surgical procedure. Surgical site infections have been shown to compose up to 20% of all of healthcare-associated infections. At least 5% of patients undergoing a surgical procedure develop a surgical site infection.

A surgical site infection may range from a spontaneously limited wound discharge within 7–10 days of an operation to a life-threatening postoperative complication, such as a sternal infection after open heart surgery. Most surgical site infections are caused by contamination of an incision with microorganisms from the patient's own body during surgery. Infection caused by microorganisms from an outside source following surgery is less common. The majority of surgical site infections are preventable. Measures can be taken in the pre-, intra- and postoperative phases of care to reduce risk of infection.

Surgical site infections can have a significant effect on quality of life for the patient. They are associated with considerable morbidity and extended hospital stay. In addition, surgical site infections result in a considerable financial burden to healthcare providers. Advances in surgery and anaesthesia have resulted in patients who are at greater risk of surgical site infections being considered for surgery. In addition, increased numbers of infections are now being seen in primary care because patients are allowed home earlier following day case and fast-track surgery.

The guideline makes recommendations for prevention and management of surgical site infections based on rigorous evaluation of the best available published evidence.

The guideline will assume that prescribers will use a drug's summary of product characteristics to inform their decisions for individual patients. In addition, published identified characteristics of appropriate interactive dressings and antimicrobial products should be considered before use, and local formularies and guidelines based on local microbial resistance patterns should be used to inform choice of antibiotics.

Central line associated Bloodstream infection: A central line associated blood stream infection is a laboratory-confirmed bloodstream infection (BSI) in patient who had central line within the 48 hour period before the development of the BSI and that is not related to an infection at another site. The CLABSI must meet one of the following criteria:

Criterion1

Patient has a recognised pathogen cultured from one or more blood cultures and Organism cultured from blood is not related to an infection at another site.

OR

Criterion2

Patient has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), chills, or hypotension and signs and symptoms and positive laboratory results are not related to an infection at another site and common skin contaminant is cultured from two or more blood cultures drawn on separate occasions.

OR

Criterion3

Patient < 1 year of age has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$ core) hypothermia ($<36^{\circ}\text{C}$ core), apnoea, or bradycardia and signs and symptoms and positive laboratory results are not related to an infection at another site and common skin contaminant is cultured from two or more blood cultures drawn on separate occasions.

Ventilator associated Pneumonia: Ventilator associated pneumonia is defined as pneumonia occurring more than 48 hours after patient has been intubated and received mechanical ventilation. Diagnosing VAP requires a high clinical suspicion combined with bedside examination, radiographic examination, and microbiologic analysis of respiratory secretions. Aggressive surveillance is vital in understanding local factor leading to VAP and the microbiologic milieu of a given unit. Judicious antibiotic usage is essential, as resistant organisms continue to plague intensive care units and critically ill patients. Simple nursing and respiratory therapy interventions for prevention should be adopted. Over the past several decades our understanding of VAP has grown significantly with regard to pathogenesis, risk factors, diagnostic testing, therapies and prevention by modifying risk factors. This paper is designed for the practicing clinician in addressing diagnosis, treatment and prevention of VAP.

Ventilator-associated pneumonia is usually suspected when the individual develops a new or progressive infiltrate on chest radiograph, leukocytosis, and purulent tracheobronchial secretions. Unfortunately, and unlike for community-acquired pneumonia, accepted clinical criteria for pneumonia are of limited diagnostic value in definitively establishing the presence of VAP. In a postmortem study by Fabregas et al., when findings on histologic analysis and cultures of lung samples obtained immediately after death were used as references, a new and persistent (>48-h) infiltrate on chest radiograph plus two or more of the three criteria (i) fever of >38.3°C, (ii) leukocytosis of $>12 \times 10^9/\text{ml}$, and/or (iii) purulent tracheobronchial secretions had a sensitivity of 69% and a specificity of 75% for establishing the diagnosis of VAP. When all three clinical variables were required for the diagnosis, the sensitivity declined further (23%); the use of a single variable resulted in a decrease in specificity (33%). The poor accuracy of clinical criteria for diagnosing VAP should not be surprising considering that purulent tracheobronchial secretions are invariably present in patients receiving prolonged mechanical ventilation and are seldom caused by pneumonia. In addition, the systemic signs of pneumonia such as fever, tachycardia, and leukocytosis are nonspecific; they can be caused by any state that releases the cytokines interleukin-1, interleukin-6, tumor necrosis factor alpha, and gamma interferon. Examples of such conditions include trauma, surgery, the fibroproliferative phase of ARDS, deep vein thrombosis, pulmonary embolism, and pulmonary infarction. Reasonable clinical criteria for the suspicion of VAP include a new and persistent (>48-h) or progressive radiographic infiltrate plus two of the following: temperature of >38°C or <36°C, blood leukocyte count of >10,000 cells/ml or <5,000 cells/ml, purulent tracheal secretions, and gas exchange degradation.

The sensitivity of the clinical criteria for VAP outlined above is even lower in patients with ARDS, where it may be difficult to detect new radiographic infiltrates. In the setting of ARDS, Bell et al. reported a false-negative rate of 46% for the clinical diagnosis of VAP. Consequently, suspicion for VAP in the setting of ARDS should be high. The presence of even one of the clinical criteria for VAP, unexplained hemodynamic instability, or an unexplained deterioration in arterial blood gases should prompt consideration of further diagnostic testing.

When purulent sputum, a positive sputum culture, fever, and leukocytosis are present without a new lung infiltrate, the diagnosis of nosocomial tracheobronchitis should be entertained. In mechanically ventilated patients, nosocomial tracheobronchitis has been associated with a longer ICU stay and time on the ventilator, without increased mortality. In one randomized

trial of intubated patients with community-acquired tracheobronchitis, antibiotic therapy resulted in a decreased incidence of subsequent pneumonia and mortality. However, prospective, randomized, controlled trials are required before antibiotic therapy can be recommended for the routine treatment of nosocomial tracheobronchitis. Furthermore, differentiation of tracheobronchitis from pneumonia is dependent upon the radiograph, which in the ICU is portable and often of poor quality. Hence, the clinician should utilize a clinical pulmonary infection score (CPIS) to direct therapy.

Hospital infection committee

An infection control committee provides a forum for multidisciplinary input and cooperation, and information sharing. This committee includes wide representation from relevant departments: e.g. management, physicians, other health care workers, clinical microbiology, pharmacy, sterilizing service, and maintenance, housekeeping and training services. The committee has a reporting relationship directly to either administration or the medical staff to promote programme visibility and effectiveness.

Responsibilities

The committee holds regular meetings and the minutes go to the Medical Director and the Hospital management boards as well as to departments directly involved in the subjects discussed during the meeting. It produces an annual report and an annual business plan for infection control.

The following are the most important activities to ensure adequate infection control practices where health care is provided.

- Provide facilities and equipment that makes it possible for the staff to maintain good infection control practices.
- Produce standards (Policies, guidelines) for procedures or systems used within the health care setting
- Implement educational programmes for all personnel in the use of such standards.
- Establish surveillance systems that identify problem areas.
- Produce a policy for the prudent use of antibiotics and work to ensure adherence to the policy.
- Produce guidelines for cleaning, disinfection and decontamination and work to ensure adherence to those guidelines.
- To define SOP for fumigation and fogging.

The Infection Control Team

Infection control team is responsible for the day to day activities of the infection control programme.

This team has a scientific and technical support role, e.g. surveillance developing and assessing policies and practical supervision, evaluation of material and products, the overseeing of sterilization and disinfection and the implementation of training.

Members of Infection Control Team (ICT)

- Physician
- Microbiologist
- Pathologist
- Surgeon
- Anesthetist
- Intensivist
- Infection control Nurse
- Infection Control Officer

Infection Control Nurse (ICN)

- The ICN be able to function as a clinical nurse specialist.
- The duties of the ICN are primarily associated with infection control practices with special responsibility for nursing problems and education.
- Training for maintaining good infection control practices & education within their clinical departments
- Establish systems of surveillance of hospital infection in order to identify at risk patients and problem areas that need intervention. Methods for surveillance include case finding by ward rounds and chart reviews, reviews of laboratory reports, and targeted prevalence or incidence surveys.
- Provide relevant information on infection problems to management and the ICC.

Responsibilities of the infection control team

- Advise staff on all aspects of infection control and maintain a safe environment for patients and staff
- Provide educational programmes on the prevention of hospital infection for all hospital persons

- Provide a basic manual of policies and procedures and ensure that local written guidelines based on these are in existence.
- Advise management of patients requiring special isolation and control measures.
- Investigate and control outbreaks of infection in collaboration with medical and nursing staff.
- Ensure that an antibiotic policy is in existence.
- Liaise with the hospital doctors and administration (managerial and nursing), community health doctors and nurses, and infection control staff in adjacent hospitals.
- Perform other duties as required, e.g., kitchen inspections, pest control, waste disposal.

RESULTS AND DISCUSSIONS

Total 605 files were audited that includes active and passive files. Passive files are of the month of January and February 2015.

Table 1

Suspected cases of Hospital Acquired Infection					
	CAUTI	SSI	CLABSI	VAP	Bedsore
Total No of files	400	400	400	400	400
Total No of suspected cases	12	8	10	20	3

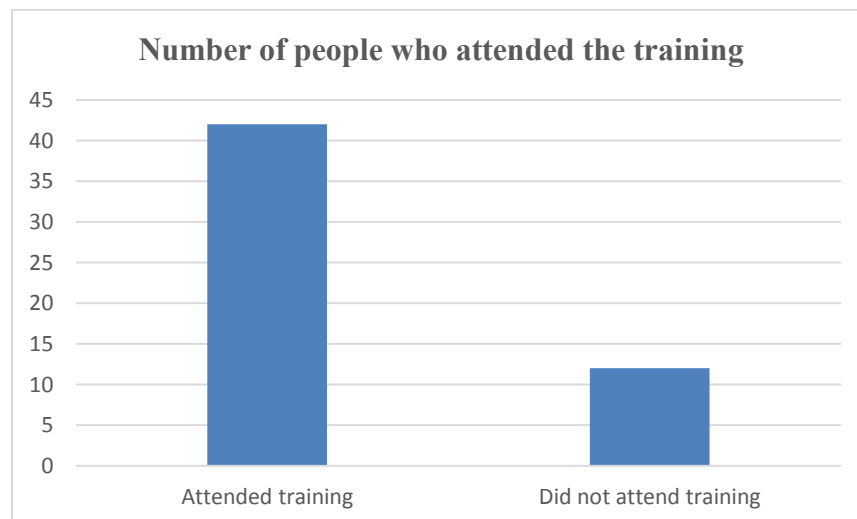
Analysis: It is found that there are around 12, 8, 10, 20 and 3 suspected cases of CAUTI, SSI, CLABSI, VAP and Bedsore respectively found after auditing the files. These cases were not rule out whether they are having HAI or they are clinical cases.

Findings of the study

A) Hand hygiene knowledge and practice

1) Professionals with training

Fig 1.1

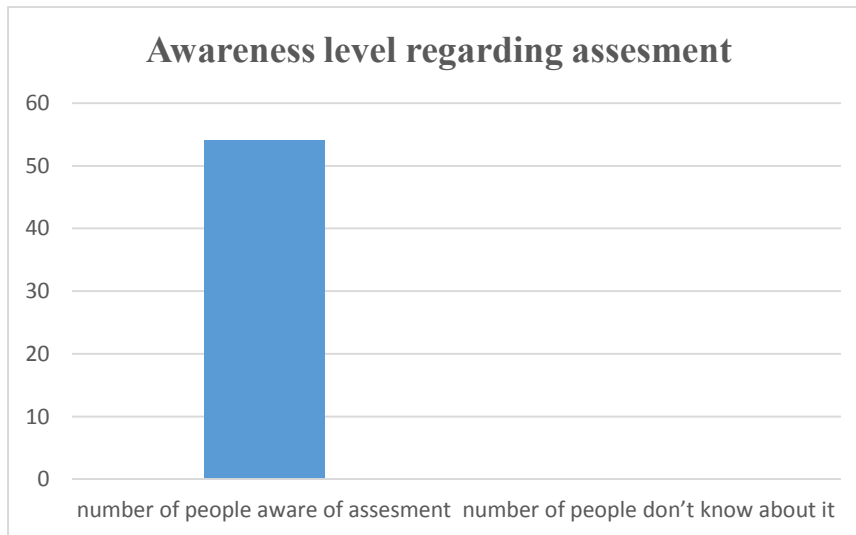


Interpretation

Out of 54 persons, 42 were those professionals who attended training and 12 were those who have not gone under training.

2) Knowledge of health-care worker regarding assessment of indications and techniques for hand hygiene which is assessed annually

Fig1.2



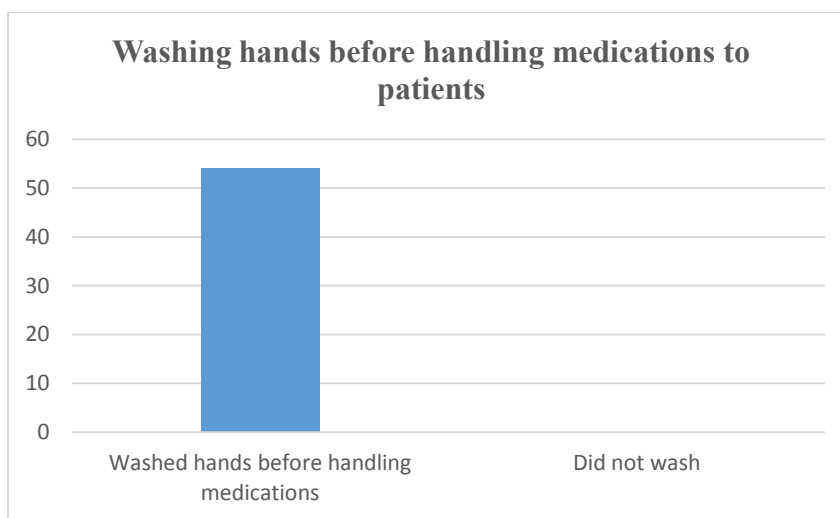
Interpretation

All the staff is aware that there is an assessment annually through a written examination which is submitted to HR department to test effectiveness. Regular observation by HIC team assures practical knowledge

3) Practice of hand hygiene

- **Before handling medication or preparing food**

Fig1.3

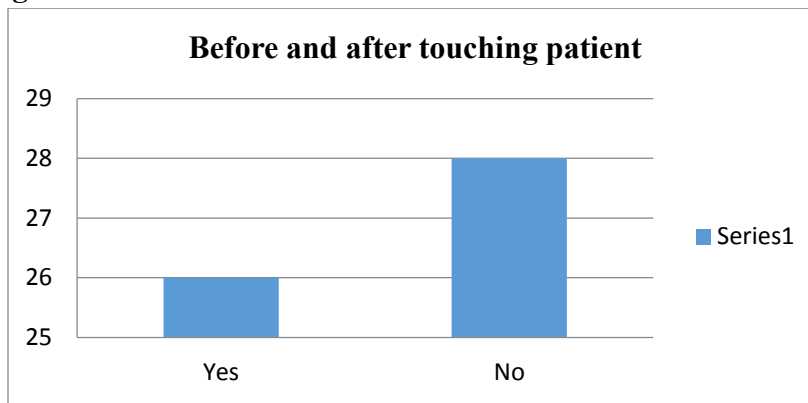


Interpretation

It's a common practice among staff to wash hands before giving food or medicines to patients

- **Wash hands before and after touching patients**

Fig1.4

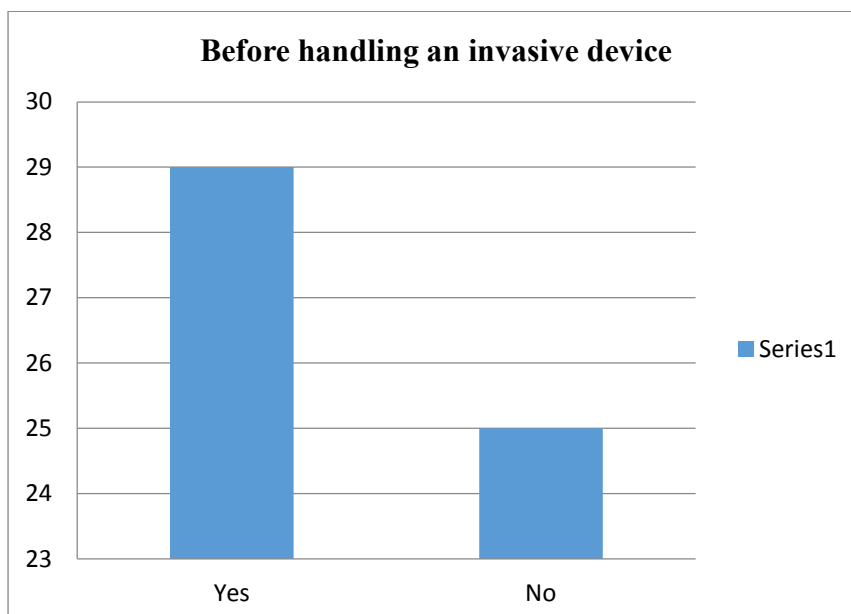


Interpretation

28 staff does not perform hand hygiene both before and after touching patient while 26 perform either before or after touching patient.

- **Before handling an invasive device for patient care, regardless of whether or not gloves are used**

Fig1.5

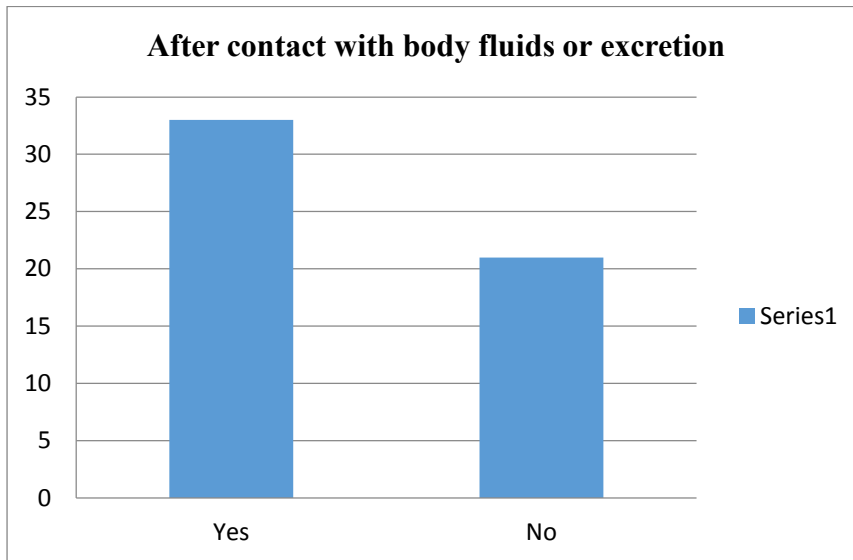


Interpretation

29 of staff perform hand hygiene before handling invasive device while 25 staff does not perform hand hygiene before handling invasive device.

- After contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings

Fig1.6

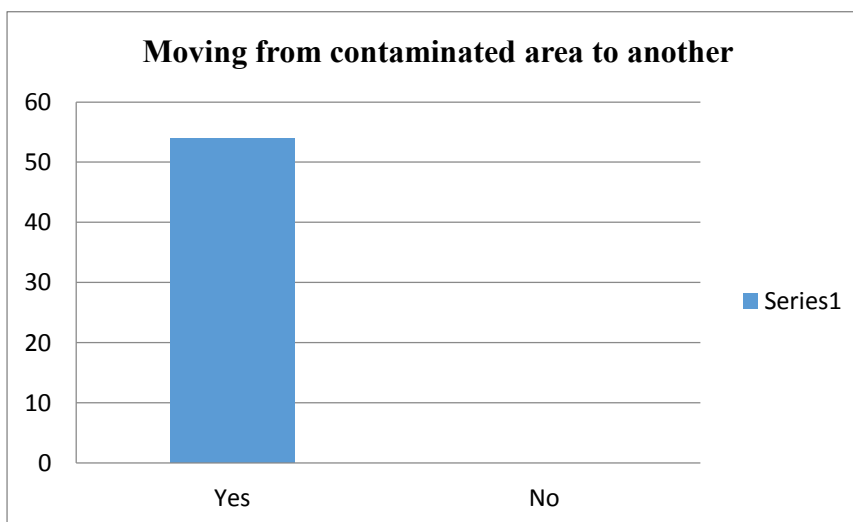


Interpretation

33 perform hand hygiene after contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings while 21 do not perform hand hygiene after contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings.

- If moving from a contaminated body site to another body site during care of the same patient

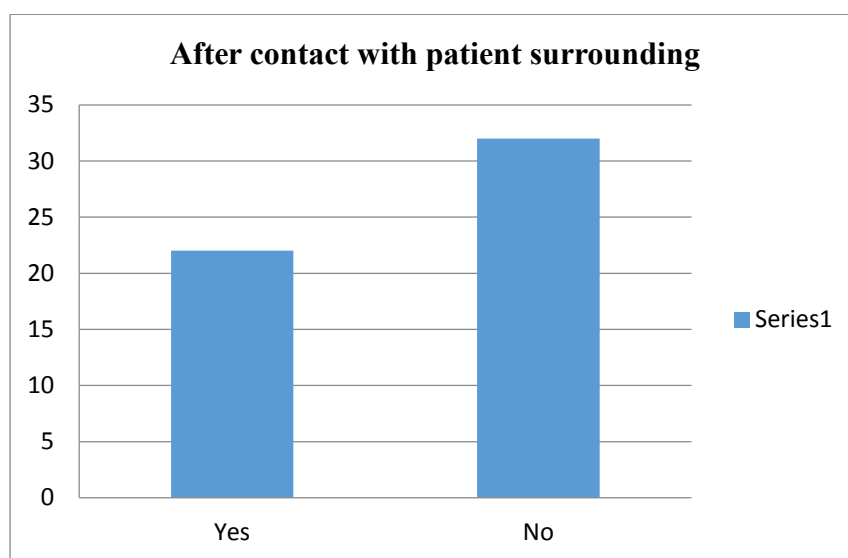
Fig1.7



Interpretation

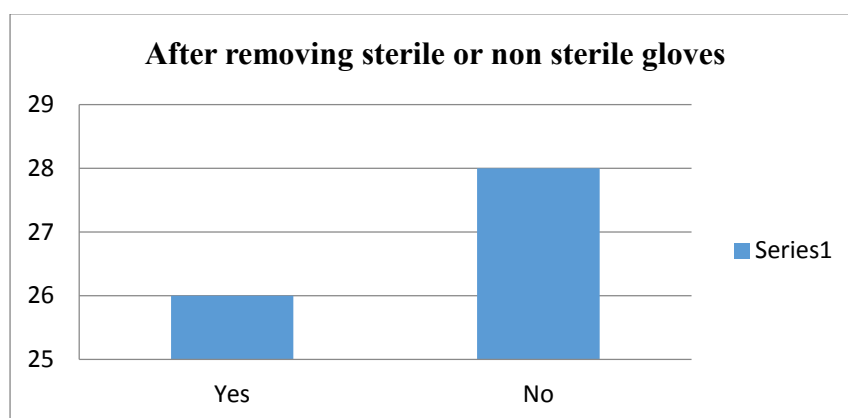
Staff is in the habit of washing hands before moving from contaminated area to another

- **After contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient**
Fig1.8



22 staff performs hand hygiene after contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient while 32 staffs do not perform hand hygiene after contact with inanimate surfaces and objects (Including medical equipment) in the immediate vicinity of the patient.

- **After removing sterile or non-sterile gloves**
Fig1.9

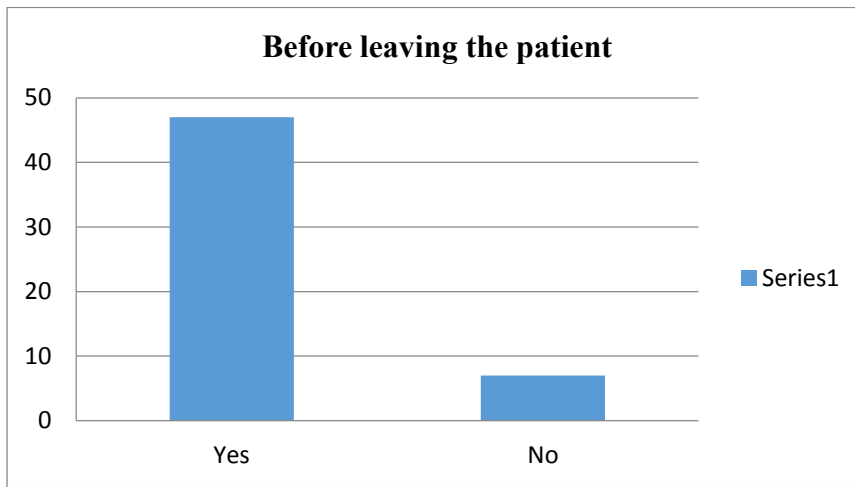


Interpretation

26 staff performs hand hygiene after removing sterile or non-sterile gloves while 28 staff does not perform hygiene after removing sterile or non-sterile gloves.

- Before leaving the patient care area

Fig1.10



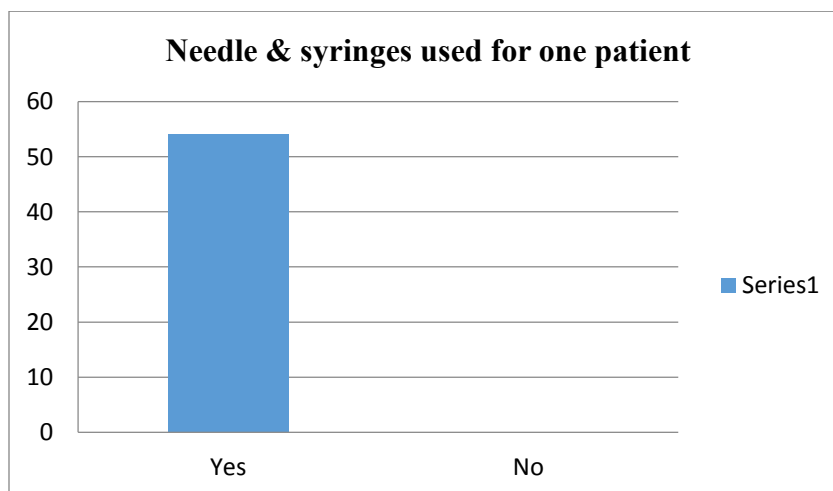
Interpretation

47 staff performs hand hygiene before leaving the patient care area while 7 staff does not perform hand hygiene before leaving the patient care area.

B) SAFE INJECTION AND INFUSION PROCESS

1) Needles and syringes are used for only one patient

Fig2.1

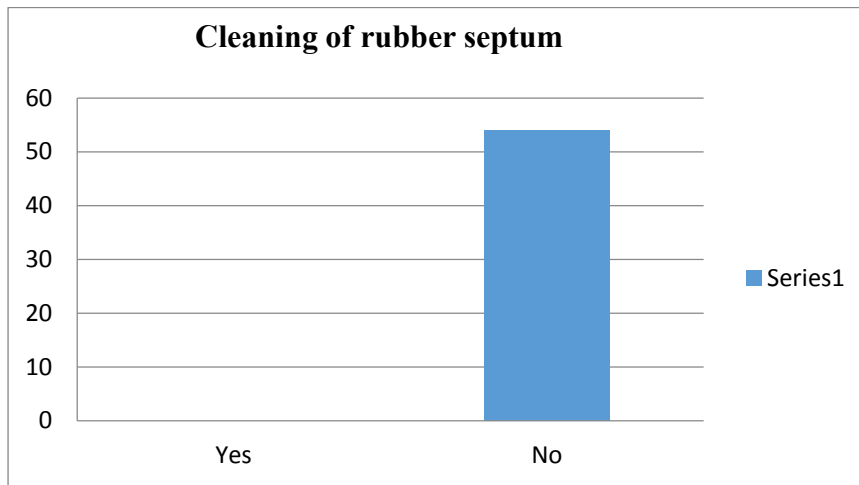


Interpretation

Staff is using disposable needles for each patient separately.

2) Cleaning of Rubber septum of a medication vial

Fig2.2



Interpretation

Rubber septum on a medication vial is not disinfected with spirit prior to piercing. Its purpose is that the infection from the surface is not transferred. Staff is in the habit of cleaning it.

C) CAUTI (catheter associated urinary tract infection)-based on observation and interview

According to CDC

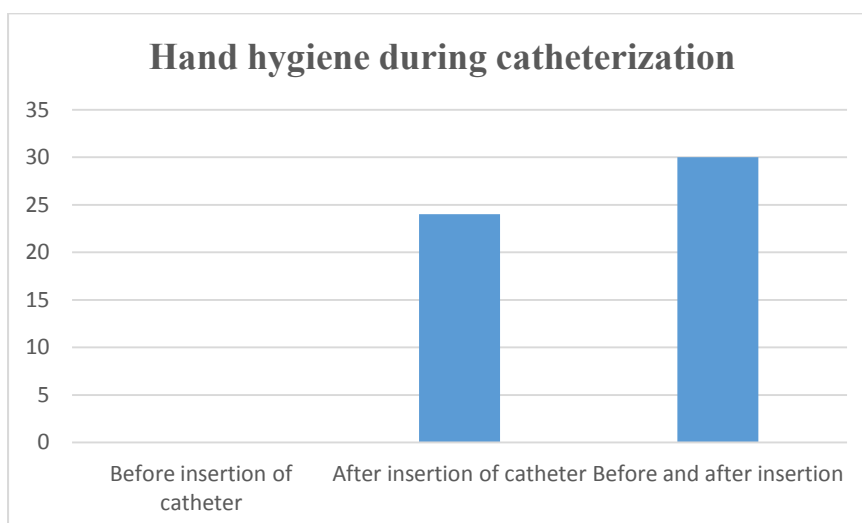
1) Catheter insertion is indicated in

- Acute urinary retention
- Measurement of urinary output (critical pts)
- Preoperative
- Pts with prolonged immobilization
- End life care comfort

It was observed that these indications are 100% followed.

2) Hand hygiene

Fig3.1

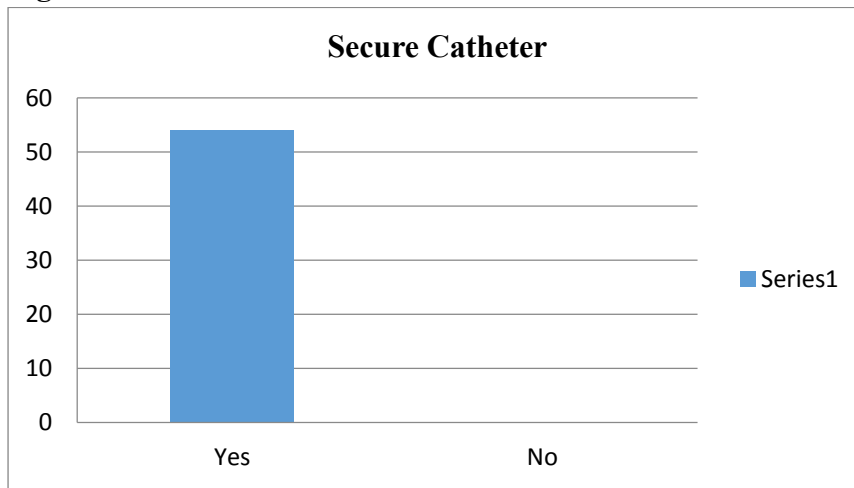


Interpretation

Hand hygiene should be done both before and after insertion, to avoid spread of infection. But only 30 are aware about hand hygiene is to be done both before and after insertion though 100% people are aware about PPE to be used.

3) Secure catheter

Fig3.2



Interpretation

They are inserted by the professionals and are secured.

4) Replace catheter

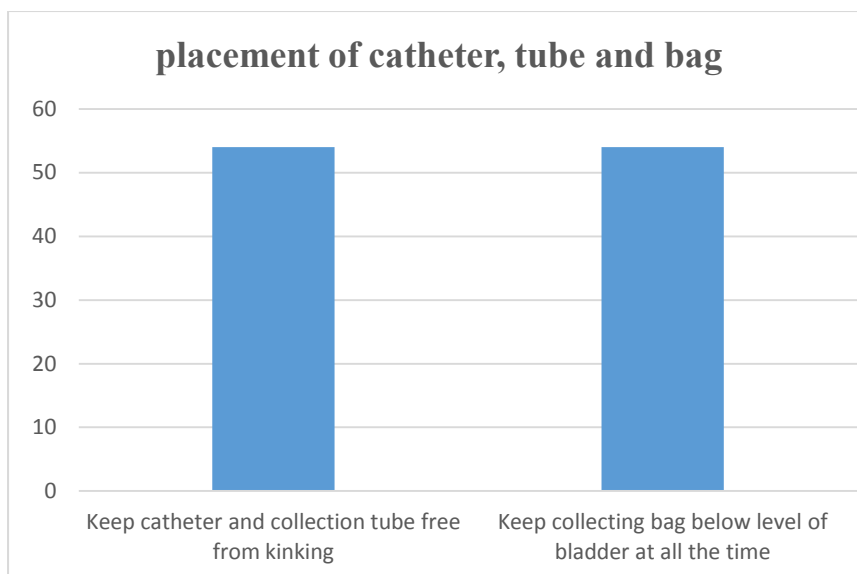
Catheters are replaced when

- Leakage
- Disconnection
- Advised by doctors (if patient need prolong catheterization)

Purpose is to avoid infection. It was found that catheters were replaced when needed

5) Placement of catheter, collecting tube and urinary bag

Fig3.3

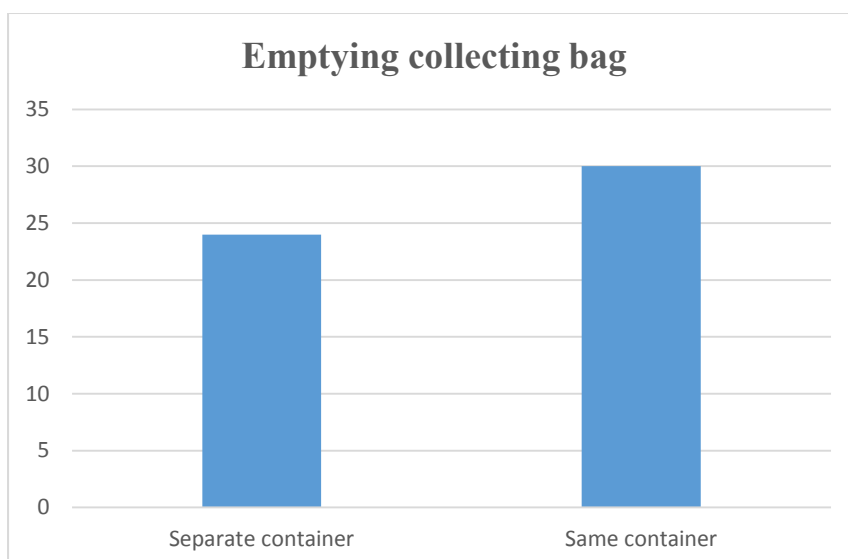


Interpretation

Purpose is to maintain unobstructed urine flow and to avoid CAUTI. It is recommended that catheter and collecting tubes are kept free from kinking and collecting bag is kept below level of bladder. It was found to be followed 100%.

6) Empty collecting bag

Fig3.4



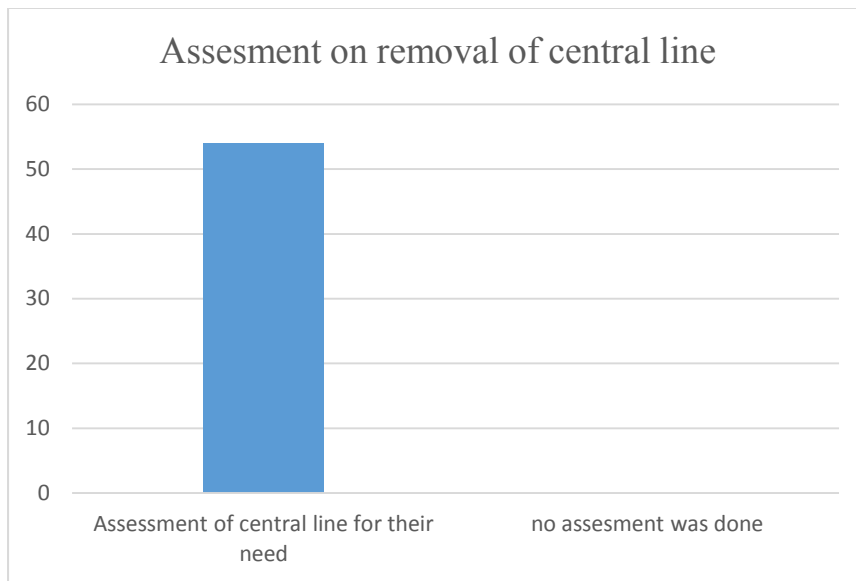
Interpretation

It is emptied regularly when filled. But there are not separate urine pots for each patient and all staff is not aware for the same. Only 24 staff aware about separate and clean containers.

D) CENTRAL LINE INFECTION-According to CDC, based on interview

1) Removal of central lines

Fig4.1

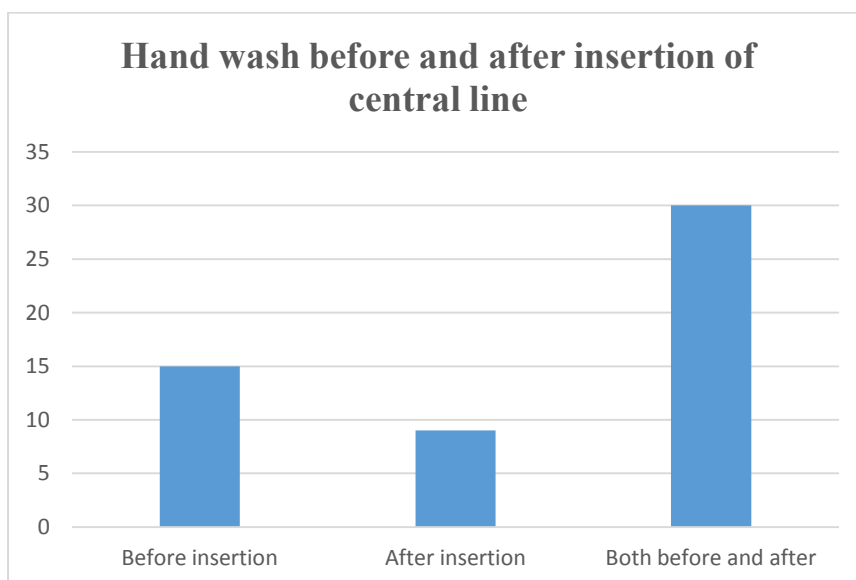


Interpretation

Unnecessary central lines are removed when indicated by the professionals after the daily audits (doctor's visit). Daily audits were done to assess central line is needed or not. Staff are aware of complication related to central line.

2) Hand hygiene

Fig 4.2



Interpretation

It should be performed both before and after the insertion of central line. But only 30 members of staff in ICU is aware of this and following the same.

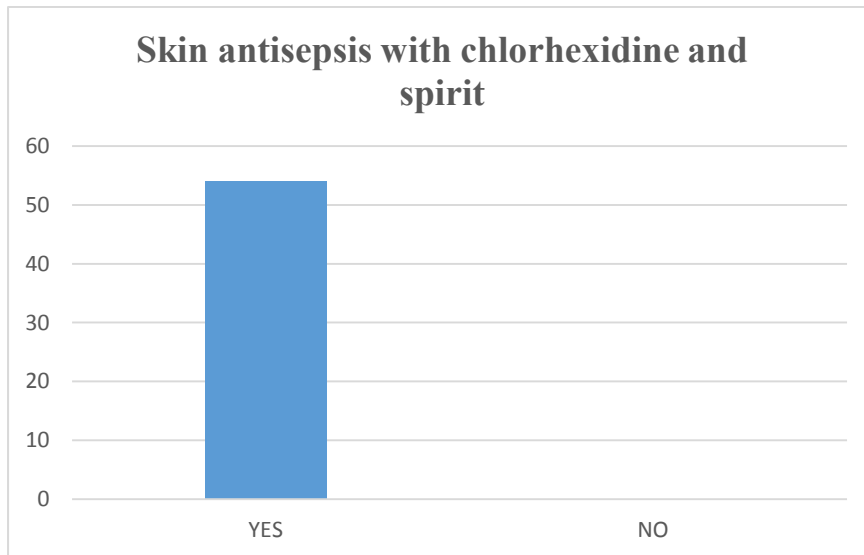
3) Sterile barrier precautions

Interpretation

General precautions are Mask, Head cap, Gown, Sterile gloves, Sterile full body drape. it was found that staff was aware of all the PPP to be used and uses mask head cap and gloves on regular basis and gown and drape if they suspect a highly infected patient.

4) Skin antisepsis

Fig4.3

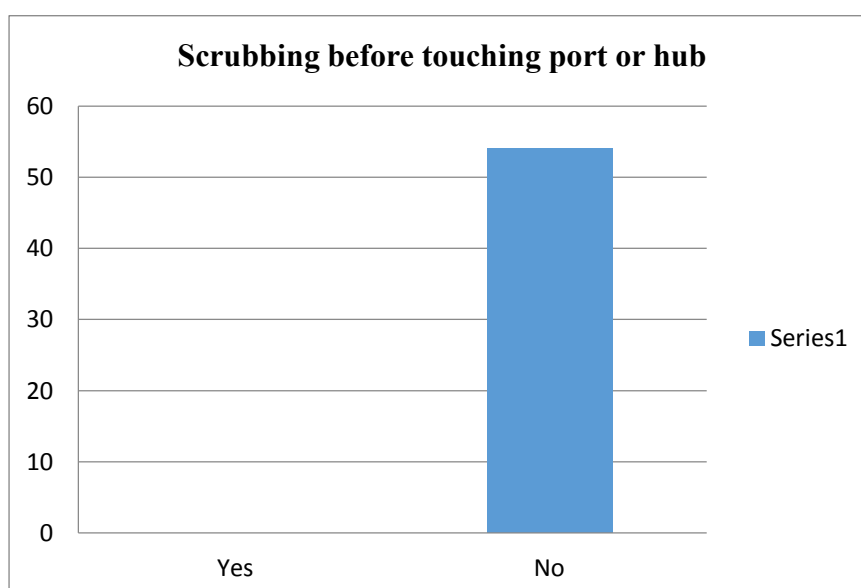


Interpretation

Skin antisepsis is done with chlorhexidine and spirit to avoid infection. Site is covered by sterile gauze. It was found that it is being done by all.

5) Scrubbing before touching port or hub

Fig4.4

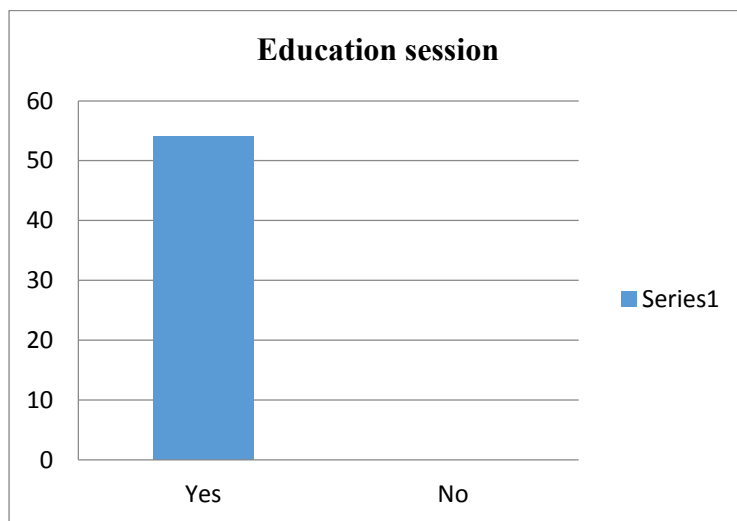


Interpretation

Standard practice- Scrubbing of the access port or hub immediately prior to each use with an appropriate antiseptic (e.g., chlorhexidine, povidone iodine, an iodophor, or 70% alcohol). But it is not performed by any staff.

6) Education sessions

fig.4.5



Interpretation

Provide recurring education sessions on central line insertion, handling and maintenance. Training is provided to all the staff but assessment of training is not done to see how much the staff gain from the training. The training must be regular.

CONCLUSION AND RECOMMENDATIONS:

1. It was seen that staff is completely aware about the infection control measures specially the hand hygiene but they lack in following the practice. This is due to lack of motivation, and overburdened staff which is due to less number of working staff as against required by the hospital.
2. Surprise inspections on weekly basis for the practical implementation of hand hygiene and PPE should be done and staff should be made aware of the importance of safety, consequences of HAI during the inspection round.
3. The collected data can be analyzed and can be presented in the meetings before the management and performance grades can be given to staff on basis of their knowledge and practical implementation.
4. Regular training should be planned
5. Some staffs do not attend training due to busy schedule, so training can be planned and staff names can be sent a week ago so that their duties can be planned accordingly and can they can attend their training.
6. There must be a policy that every doctor must rule out case of HAI and it should be documented in patient's file.
7. The admitted patient file should have a checklist for HAI which has all the criteria to differentiate a HAI.
8. Staff should note day of catheter or CVP line insertions and of other procedures which may lead to infection if not properly managed time to time.
9. Urinary catheter and central line catheter tip has to be checked for the presence of organism.

APPENDICES

Checklist for Hospital Acquired Infection

Catheter associated urinary tract infection	
Sign and Symptoms	1) Asymptomatic bacteriuria
	2) Symptomatic infection ie., fever with rigors, nausea vomiting, burning micturition, etc.
	3) Bacteremia- secondary blood stream infection.
Criteria	Whose urinary tract is currently catheterized or has been catheterized within the previous 48 hours

Surgical site infection	
Sign and Symptoms	1) Wound discharge upto 30 days of operation.
	2) There may be fever and other symptoms.
Criteria	Discharge from wound 7-10 days of operation and up to 30 days

Central line associated bloodstream infection	
Sign and Symptoms	1) Pathogen cultured from blood not related to infection other side.
	2) Fever, chills and hypotension
	3) Patient < 1year of age having fever, hypothermia, apnea or bradycardia.
Criteria	Having central line for 48 hours or more than 48 hours

Ventilator associated pneumonia	
Sign and Symptoms	1) Purulent trachea-bronchial secretion. CXR shows patchy infiltration.
	2) Fever with leucocytosis.
Criteria	Symptoms of pneumonia after 48 hours of intubation.

Checklists used: On hand hygiene

How easily available is alcohol-based hand rubs in your health care facility?	i. Not available ii. Available only in some wards or in discontinuous supply (with efficacy¹ and tolerability² proven) iii. Available facility-wide with continuous supply (with efficacy¹ and tolerability² proven) iv. Available facility-wide with continuous supply, and at the point of care³ in the majority of wards (with efficacy¹ and tolerability² proven) v. Available facility-wide with continuous supply at each point of care³ (with efficacy¹ and tolerability² proven)
What is the sink: bed ratio?	i. Less than 1:10 ii. At least 1:10 in most wards iii. At least 1:10 facility-wide and 1:1 in isolation room and in intensive care units
Is there a continuous supply of clean, running water?	i. No ii. yes
Is soap available at each sink?	i. No ii. yes
Are single-use towels available at each sink?	i. No ii. yes
How frequently do health-care workers receive training regarding hand hygiene?	i. Never ii. At least once iii. Regular training for medical and nursing staff, or all professional categories (at least annually) iv. Mandatory training for all professional categories at commencement of employment, then ongoing regular training (at least annually).
Is a system in place to ensure that all health-care workers complete this training?	i. No ii. yes
Is a professional with adequate skills to serve as trainer for	i. No

hand hygiene educational programs?	ii. yes
Is health-care worker knowledge regarding indications and technique for hand hygiene assessed at least annually?	i. No ii. yes
Is consumption of alcohol-based hand rub monitored monthly (or at least every 3-5 months)?	i. No ii. yes
Is consumption of soap monitored monthly (or at least every 3-5 months)	i. No ii. yes
Indications for hand hygiene	Before handling medication or preparing food
	Wash hands when visibly dirty or visibly soiled with blood or other body fluids or after using the toilet
	Before and after touching the patient
	Before handling an invasive device for patient care, regardless of whether or not gloves are used
	After contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings
	If moving from a contaminated body site to another body site during care of the same patient
	After contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient
	After removing sterile or non-sterile gloves
	Before leaving the patient care area
Use of gloves	i. Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes or non-intact skin will occur ii. Remove gloves after caring for a patient. Do not wear the same pair of gloves for the care of more than one patient iii. When wearing gloves, change or remove gloves during patient care if moving from a contaminated body site to either another body site within the same patient or the environment

Timing	i. Hand Hygiene Technique with Alcohol-Based Formulation(20-30secs) ii. Hand Hygiene Technique with Soap and Water(40-60secs)
SAFE INJECTION AND INFUSION PROCESS	i. Needles and syringes are used for only one patient ii. Rubber septum on a medication vial is disinfected with alcohol prior to piercing iii. medication vials are entered with new needle and a new syringe, even when obtaining additional doses for the same patient iv. single use medication vials, ampoules, and bags or bottles of IV solutions are used for only one patient v. medication administration tubing and connectors are used for only one patient vi. all sharps are disposed off in a puncture - resistant sharp container vii. single - use devices are discarded after use and not used for more than one patient viii. protocol for needle stick injury
CAUTI	
1. Insert catheters only for appropriate indications	i. acute urinary retention ii. measurement of urinary output(critical pts) iii. preoperative iv. pts with prolonged immobilization v. end life care comfort
2. leave catheter in place	i. <=24hours ii. >24hrs in max patients(>50%) iii. >24hrs(only in indicates patients)

3. hand hygiene	i. before insertion of catheter ii. after insertion of catheter iii. both(before and after insertion)
4. secure catheters	i. no ii. yes
5. replace catheter	i. disconnection ii. leakage
6. Maintain unobstructed urine flow	i. Keep catheter and collecting tube free from kinking ii. Keep collecting bag below level of bladder
7. Empty collecting bag	i. Regularly ii. Separate, clean container for each patient
8. Rest bag on floor	i. Yes ii. no
9. drainage spigot	i. contact non sterile container ii. do not contact non sterile container
CENTRAL LINE INFECTION	
1. Promptly remove unnecessary central lines	i. daily audits to assess whether each central line is still needed ii. daily audits not done to assess whether each central line is still needed
2. proper insertion practices	
3. hand hygiene	i. before insertion of catheter ii. after insertion of catheter iii. both(before and after insertion)
4. sterile barrier precautions	i. mask ii. head cap iii. gown iv. sterile gloves v. sterile full body drape
5. skin antisepsis	i. done with >0.5% chlorhexidine with alcohol ii. not done
6. Cover the site with	i. sterile gauze ii. transparent, semi permeable dressings
7. Replace dressings that are	i. Wet

	ii. Soiled iii. dislodged
8. Perform dressing changes under aseptic technique using clean or sterile gloves	i. Yes ii. no
9. Scrubbing of the access port or hub immediately prior to each use with an appropriate antiseptic (e.g., chlorhexidine, povidone iodine, an iodophor, or 70% alcohol)	i. Yes ii. no
10. Provide recurring education sessions on central line insertion, handling and maintenance	i. Yes ii. no

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